
General information

Enhanced Overflow (EOVF) vastly expands the operations for overflow queues and Target queues within an existing Automatic Call Distribution (ACD) switch. The Enhanced Overflow package can operate in any existing ACD application.

Network ACD supports ACD functions over an Integrated Service Digital Network (ISDN). All the requirements for ISDN are required for Network ACD.

This is a descriptive and administrative publication for the Enhanced Overflow feature and Network ACD. This feature requires X11 Release 15 or higher and is supported only on the following machine types:

- SL-1 ST, STE, NT, RT, XT
- System options 11, 21, 21E, 51, 51C, 61, 61C, 71, 81, and 81 C.

Starting with X11 Release 21, the following features are available:

- Collect Call Blocking (Brazil) provides a mechanism for special treatment of incoming DID and CO collect calls on 2 Mbit/sec digital trunks and analog trunks. This feature is provided on a route and individual user basis.
- Meridian Link Predictive Dialing Support

- M911 Enhancements include Call Abandon and MADN Display Coordination. Call Abandon provides the ability to treat an abandoned call as though the calling party remained online. MADN Display Coordination adds the Application Module Link, Meridian Link, and Application Module Base Application Program Interface (API) messages that enable Meridian 911 and ML applications to provide display coordination for a call taker that holds/receives multiple active calls across a MADN.
- Multiple Queue Assignments allows ACD agents to service calls from multiple ACD queues simultaneously, and choose the queues they wish to service at login.

Before using this document, you must have a working knowledge of both ACD and Integrated Service Digital Networks. Refer to the publications listed on page 59 for related background information.

This section is an introduction to the Network ACD application. Details for the administration and operation of the features are covered later in this document.

Enhanced Overflow (EOVF) increases the number of Target ACD Directory Numbers (DNs) from 6 to 100 within the existing Time Overflow (TOF) feature application. As a stand-alone feature, it works only in local applications. EOVF alone does not provide network services, but is prerequisite for Network Automatic Call Distribution (NACD).

Network ACD provides ACD capabilities over an Integrated Service Digital Network (ISDN). An NACD system distributes ACD activities between several sites. Connected by ISDN voice and data services, different sites can be physically or geographically separated within the network.

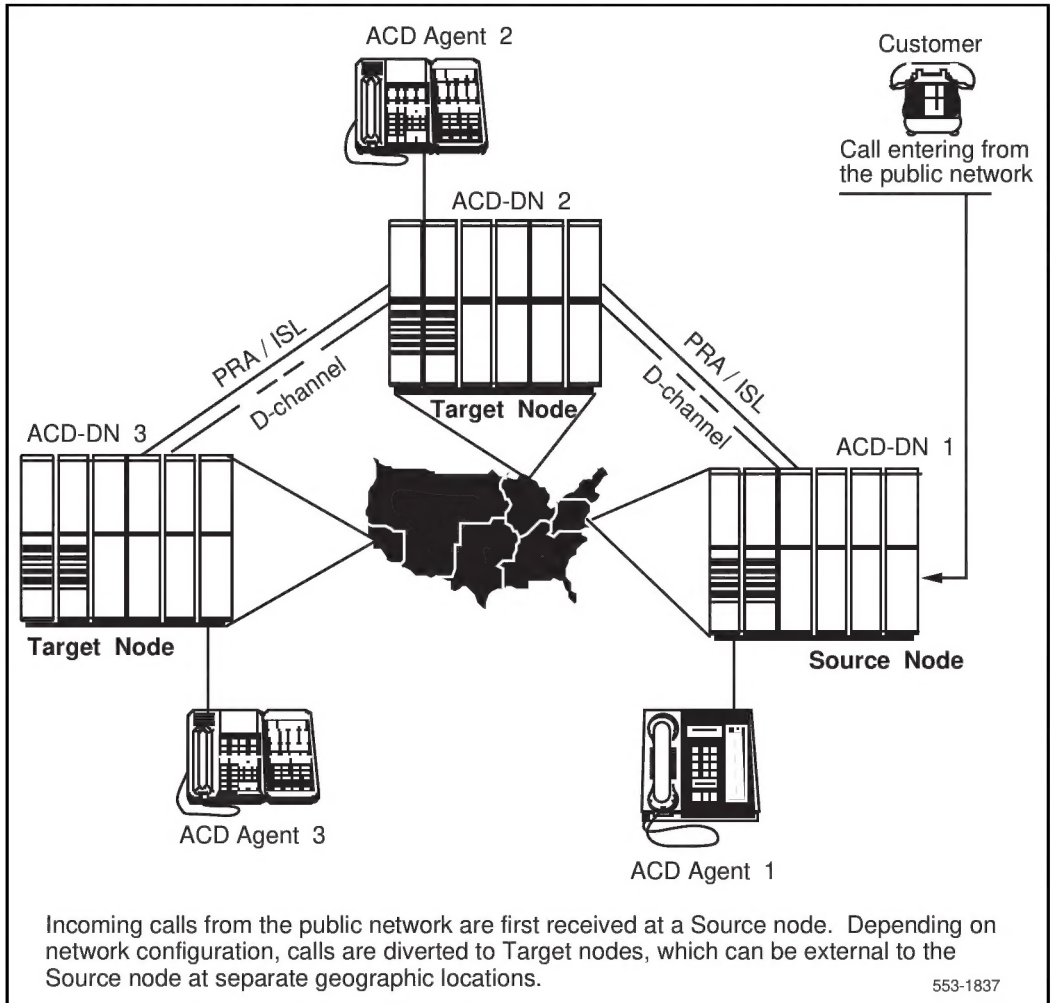
System operations and call overflows are transparent to the caller. The ACD agents notice some display changes; however, ACD supervisors and system technicians must be aware of the configuration and operation of NACD to properly support the application for a customer.

With EOVF and NACD enabled and supported in the network, calls can be serviced as shown in Figure 1.

The Source node is a queue that has target queues assigned, and makes outgoing calls.

The Target node is the queue that the calls come into.

Figure 1
High-level overview of Network ACD



Enhanced Overflow

Enhanced Overflow (EOVF) allows a maximum of 20 Target queues for each Source ACD DN.

Enhanced Overflow defines local Target queues for each Source ACD DN. EOVF diverts incoming calls from an overloaded ACD DN to Target ACD DNs (like Time Overflow) that are local to the Source ACD DN.

Enhanced Overflow enhances Time Overflow (TOF) operation to increase the number of ACD DN's serviced by a Target from 6 to 100. That is, with the EOVF package, any particular ACD DN configured as a Target can accept calls from up to 100 other ACD DN's on the same switch.

Diverting calls from the Source ACD DN to the appropriate Target ACD DN is controlled by Routing Tables configured in software LD 23, with related timers and threshold values. Engineering for these tables is described later in this document.

A Source can define 20 Targets. A Target can have an unlimited number of Targets. The range is

- TOF 2 to 1800 seconds
- EOVF 0 to 1800 seconds

Table 1
Time Overflow versus Enhanced Overflow

	Timers	Number of Targets	Number of Sources	Night mode supported
Time Overflow (TOF)	2 to 1800 seconds	3 Must be the same Targets as overflow by count	6	no
Enhanced Overflow (EOVF)	0 to 1800 seconds	20 Does not have to be the same Targets as overflow by count	no limit	yes

Network ACD overview

Environment

The Enhanced Overflow (EOVF) (package 178) is required to support Network ACD (NACD). Network ACD (package 207) allows ACD functionality between physically separated locations in a multinode Meridian 1 network. This allows ACD agent groups at different locations (nodes) to service calls over the network at remote targets, independent of where the call first entered the network. Network ACD uses ISDN D-channel messaging to exchange information between nodes.

NACD on a 911 application

If the incoming route is set up with CPDC = YES and it uses CDP to direct the call to queue 2 without using NACD, the call will go to queue 2. For an NACD application, CPDC must be set to NO.

Call Processing

Like EOVF, Network ACD allows Target queues to be defined for Source ACD DN. Network ACD can define Source and Target queues for each ACD DN. NACD diverts incoming calls from an overloaded ACD DN to Target ACD DN (like EOVF), which can be local or remote to the Source ACD DN. Local Targets are on the same node as the Source ACD DN, and remote Targets are at a different node.

Diverting calls in NACD is controlled by Routing Tables with timers. Calls diverted by NACD can be answered by the Source ACD DN or any one of up to 20 Target ACD DN. By using ISDN D-channel messaging to queue Call Requests at remote Target ACD DN, voice calls are not physically diverted until an idle agent is reserved for that call at the remote Target node. If no trunks are available, a call doesn't go across the network. If trunks are available, the agent is reserved until the timer expires.

Refer to "Designing the NACD Routing Table" on page 101.

When the Target timer expires and there are no idle agents available at the Source node, NACD software sends a Call Request over the ISDN D-channel to a defined Target ACD DN. An idle Target agent is matched with an individual Call Request. That Target agent is reserved for that call, and the Target node responds through the D-channel with an Agent Free notification. When the Agent Free notification is sent, the agent is reserved and a customer-defined Reserve Agent Timer starts. Only after receiving the Agent Free notification does the NACD Source node physically divert the voice call to the Target ACD DN. When reserved, an agent is not available to receive ACD calls from any other queue.

The Reserve Agent Timer (RAGT), as configured in CD 23, prevents an agent from being reserved indefinitely and unavailable for calls. A timer countdown is shown on the agent's Digit Display if desired. If the call is not presented before the timer expires, the agent is returned to the Idle Agent queue and the call remains in place in the Source node.

There are some situations that can change an agent's reserved status or cancel a Call Request; these situations are described later in this document.

Call Request queue

Target ACD DNs have an additional queue created to handle incoming NACD traffic—the Call Request queue. Logical Call Requests (*not* physical calls) are queued in the Call Request queue for the Target ACD DN until an agent is available.

Engineering

Operating parameters for NACD must be carefully engineered for proper functioning. To interact with supporting systems, this feature requires certain configurations. In order to protect other feature operations, some precautions are suggested in “NACD engineering” on page 83.

The NACD engineering section also contains a list of all hardware and software requirements for Networking ACD applications. Be sure to read the entire section before starting to implement NACD.

The NACD feature requires ISDN to already be active between the sites enabled for NACD. Take special note of the sections in this document that address package requirements, feature engineering, and feature interactions.

Network ACD is a separate package from the ACD packages. Refer to the engineering section for a complete list of the package dependencies involved.

Dialing plan configuration is critical to NACD operation. See “NACD engineering guidelines” on page 90.

Management reports

Package C for ACD provides reports to assist ACD supervisors with agent and traffic statistics. Although no new fields are introduced in the output reports, the reports are changed by circumstance because calls are presented or received at potentially diverse locations. Supervisors must be aware of network operations, because the values presented in the supervisor’s display are affected by NACD.

Details for changes to Management reports are covered in the section on operations in this document. See “Management reports” on page 117.

Collect Call Blocking (Brazil)

In Brazil an automatic long distance collect call service called DDC is available. The collect Call Blocking feature enables a Meridian 1 administrator to block DDC calls on incoming Direct Inward dialing (DID) and Public Exchange/Control Office trunks (analog or DT12). Under the following conditions, the Meridian 1 sends a special answer signal to the Central Office that collect calls cannot be accepted:

- The Collect Call Blocking (CCB) package 290 is enabled
- The incoming route has CCB enabled via the CCB prompt in the Route Data Block, and
- The call is answered by a CCB user (i.e., Collect Call Blocking Allowed Class of Service or option).

New Classes of Service and prompts have been introduced to inhibit specific users from receiving collect DID and Central Office calls. These can be configured for the following:

- analog (500/2500 type) and Meridian 1 proprietary sets, through the Collect Call Blocking Allowed/Denied (CCBA/CCBD) Class of Service.
- Attendant and Network Alternate Route Selection calls on a per customer basis through CCBA/CCBD option.
- Automatic Call Distribution (ACD) queues through the CCBA prompt.
- Direct Inward system Access (DISA) through the CCBA prompt.
- Tandem calls dialed with Coordinated Dialing Plan (CDP) (Trunk Steering Code, Distant Steering Code) through the CCBA prompt.
- Tandem non-CDP calls through the CCBA prompt in the Route Data Block from the outgoing trunk route.

The Meridian 1 sends the CCB answer signal in place of the regular signal for incoming DID/CO calls from routes with CCB enabled, when a call is answered by a CCB user. If the call is a collect call, the CO will disconnect the call.

Operating parameters

The Collect Call Blocking feature supports both analog and DT12 trunks, and the following Intelligent Peripheral Equipment (IPE) cards:

- The NTCK 16BB Extended Flexible COT Trunk Card (XFCOT) with firmware flash timing
- The NT8D14BA Enhanced Extended Universal Trunk Card (EXUT) containing the Centrex Switchhook Flash function in the firmware, and
- The NT8K14AK Extended Universal Trunk Card (XUT) which may be used if the Centrex Switchhook Flash is configured with software timing.
- The Collect Call Blocking answer signal can only be sent in cases where answer supervision is provided by the Meridian 1.

Once the modified answer signal is sent to the CO, the Meridian 1 has no control over how the call will be handled by the CO.

If a CCB user answers a call from a CO/DID route with Collect Call Blocking activated, the CCB answer signal is sent to the CO for all incoming DID and CO calls. For analog trunks, the user will experience clicking on the line and a temporary break in speechpath (0.5 to 2.5 seconds) while the CCB answer signal is being sent.

If the XFCOT and EXUT cards do not have flexible firmware timing, the CCB flash portion of the CCB answer signal will be returned to the CO. However, software controlled signaling can be done with EXUT cards.

In a standalone environment, all input from a set (except from the Release key) is ignored while the Collect Call Blocking answer signal is being sent.

Collect Call Blocking is applied to attendants on a customer basis only; it cannot be applied on a tenant basis.

The answer signal returned for a call from a route with CCB enabled and that is Network Attendant Service (NAS) routed is determined by the customer option on the source node. Thus, NAS routing can be configured across any Meridian Customer Defined Network environment, but the source node determines the answer supervision sent to the CO.

Call Detail Recording (CDR) record timing begins on the first answer of the CCB answer sequence. For this reason, CDR records will be generated for incoming calls to CCB users across routes on which CCB is enabled. If the call is collect, and is dropped, a CDR record of approximately CCB1 + CCB2 length will be generated.

For data calls all calls will be answered with the CCB answer signal, if CCB is enabled. This may have an effect on data protocols, while CCB signaling is taking place.

If firmware timing is used (FWTM = YES in LD 14) for sending the CCB flash, the CCB2 timer is downloaded to the card before sending the firmware flash. If the CCB2 timer is changed in the Route Data Block, either the card has to be enabled or the switch has to be initialized to get the new CCB2 timer downloaded to the card.

Feature interactions

Automatic Answerback The Automatic Answerback (AAB) feature, when assigned to a Meridian 1 proprietary set, allows any incoming N) to be answered automatically. If an incoming DID or CO call terminates on a set with the AAB feature enabled, the call is automatically answered after one ring. If the set has a CCBA Class of Service, the CCB answer signal is provided in the place of the regular answer signal.

Automatic Call Distribution Collect Call Blocking can be enabled on an ACD queue basis. Hence, if an incoming CO or DID call is answered by an ACD agent, the answer supervision signal that is returned to the CO is determined by the value of the CCBA prompt in LD 23. While the CCB answer signal is being sent, the same limitations apply to ACD as apply to sets with CCBA Class of Service.

Automatic Call Distribution Interflow If an ACD call from a route with CCB enabled is diverted to an interflow DN, and answer supervision has not already been provided, the answer signal returned to the CO depends on the source ACD queue. The CCB answer signal is returned to the CO if the source ACD queue has CCB enabled.

Automatic Call Distribution Night Call Forward If an ACD call from a route with CCB enabled is diverted to a Night Call Forward DN, and answer supervision has not already been provided, the answer supervision signal returned to the CO depends on the source ACD queue. The CCB answer signal is returned to the CO if the source ACD queue has CCB enabled.

Automatic Call Distribution Night RAN Route Announcement If an ACD call from a route with CCB enabled is diverted to a Night RAN route (defined by NRRT in the ACD block), the CCB signal returned to the CO depends on the source ACD queue. If the source ACD queue has CCB enabled, the CCB answer signal is sent to the CO.

Autoterminate If an incoming DID or CO call from an autoterminate trunk terminates on a set or ACD queue with a CCBA Class of Service, the CCB answer signal is provided in place of the regular answer signal.

Basic Rate Interface (BRI) Sets

For BRI sets CCBA/CCBD Class of Service cannot be programmed. Therefore, it is not possible to prevent BRI sets from accepting DDC collect calls.

Central Answering Position (CAP) The answer signal returned to the CO for calls that get answered by a Central Answering Position (CAP) is determined by the source ACD configuration and not the customer option (CCBA/CCBD in LD 15) on the source node.

Centralized Attendant Service The answer signal returned to the CO for calls that get answered by a Centralized Attendant Service is determined by the customer option (CCBA/CCDB in LD 15) on the source node.

Centrex Switchhook Flash A Centrex Switchhook Flash cannot be invoked by another feature while the CCB answer signal is being sent.

Enhanced Malicious Call Trace If a station activates Malicious Call Trace (MCT) while the CCB answer signal is being sent, MCT activation is ignored. This also applies to the case when MCT is activated from a remote node.

Meridian Mail Because Meridian Mail is configured using ACD queues, the same interactions exist as in the ACD case. When Meridian Mail sends a call answer message to the Meridian 1, the CCB configuration in the source ACD queue is used to determine if a CCB answer signal should be sent to the Central Office. All mail boxes using the same ACD queue to access Meridian Mail will get the same CCB treatment.

If some of the mail boxes are allowed to receive collect calls, this may be a problem. A possible solution is to configure two ACD queues on the Meridian 1 to access Meridian Mail. One queue would have collect calls allowed (i.e.e, CCBA = NO) and the second queue would have collect calls denied (i.e.e, CCBA = YES).

Network Automatic Call Distribution The answer signal returned to the CO for a network ACD call from a route with CCB enabled is determined by the source ACD queue. If the source ACD queue has CCB enabled, the CCB answer signal is returned in place of the regular answer signal.

Pilot DN If an incoming DID or CO call has CCB enabled and is routed to a pilot DN, the answer signal returned to the CO is determined by the CCB configuration of the terminating station.

Private Line Service If an incoming DID or CO call from a private line trunk terminates on a set with a CCBA Class of Service, the CCB answer signal is provided in place of the regular answer signal.

Recorded Announcement (RAN) A RAN route is defined as having CCBA YES or NO, which is used if Coordinated Dialing Plan (CDP) or ACD queues were not used to get to the RAN route. If the call is routed through ACD/CDP to terminate on RAN, the CCB treatment will depend upon the CCB data of the ACD/CDP, and not the RAN route.

Tandem to Unsupervised Trunk If an incoming DID or CO call tandems to an unsupervised trunk before it terminates, the answer signal is sent by time-out. Therefore, any CCB tandem calls made to unsupervised trunks will not have the CCB answer signal sent until the time-out occurs.

Trunk Hook Flash (THF) If a station activates THF while the CCB answer signal is being sent, THF activation is ignored.

Feature packaging

Collect Call Blocking (CCB) package 290 must be provisioned to activate this feature.

Feature implementation

LD 16 – Enable Collect Call Blocking on a route and configure timers.

Prompt	Response	Description
REQ	NEW CHG	Add new data. Change existing data.
TYPE	RDB	Route Data Block.
CUST	xx	Customer number.
ROUT	0-511	Route Number.
TKTP	aaa	Trunk type. Must be COT,DID,FEX, or WAT for CCB.
...		
M911_ANI	NO	M911 route. Must be set to NO to enable CCB.
ISDN	NO	ISDN route. Must be set to NO to enable CCB.
...		
ICOD	IAO,ICT,OGT	Incoming and outgoing, incoming, or outgoing. Must be either IAO or ICT to enable CCB.

...		Must be either IAO or OGT to get the CCBA prompt for outgoing calls.
CNTL	(NO), YES	Collect Call Blocking enabled or disabled on incoming route. CCB package 290 is required. Enter YES to obtain CCB timer prompts.
CCB1	512-(1536)-4992	Collect Call Blocking delay timer 1 in milliseconds. Input rounded to the next multiple of 128 milliseconds.
CCB2	500-(1520)-2550	Collect Call Blocking delay timer 2 in milliseconds. Input rounded to the next multiple of 10 milliseconds. If any CCB route members (trunks) are using firmware timing (FWTM = YES in LD 14), changes to the CCB2 timer value will not take effect until the new timer value is downloaded to the card. This can be done by enabling the card or initializing the switch.
CCBA	(NO), YES	Collect Call Blocking allowed or denied for outgoing route.

LD 14 – Set up the firmware timing for XFCOT and EXUT cards.

Prompt	Response	Description
REQ	NEW CHG	Add new data. Change existing data.
TYPE	DID,COT,FEX,WAT	Trunk Type.
TN	l s c u c u	Terminal Number. For Option 11.
XTRK	ECUT,XCOT	Type of card.
FWTM	(NO), YES	Firmware timing for flash. Enter YES to enable firmware timing.
CUST	xx	Customer number.
RTMB	xxx xxx	Trunk route and member number.
SUPN	YES	Answer supervision required.

LD 15 – Add or change Collect Call Blocking for attendants.

Prompt	Response	Description
REQ	NEW	Add new data.
	CHG	Change existing data.
TYPE	CDB	Customer Data Block.
CUST	xx	Customer number.
...		
CAS	(NO, YES)	Centralized Attendant Service.
OPT	(CCBD), CCBA	(Deny) allow Collect Call Blocking.

LD 10 – Add or change Collect Call Blocking for analog (500/2500 type) sets.

Prompt	Response	Description
REQ	NEW	Add new data.
	CHG	Change existing data.
TYPE	500	Telephone type.
TN	I s c u c u	Terminal Number. For Option 11.
...		
CLS	(CCBD), CCBA	(Deny) allow Collect Call Blocking.

LD 11 – Add or change Collect Call Blocking for Meridian 1 proprietary sets.

Prompt	Response	Description
REQ	NEW CHG	Add new data. Change existing data.
TYPE	aaaa	Telephone type, where: aaaa = SL1, 2006, 2008, 2009, 2016, 2018, 2112, 2216, 2317, 2616, or 3000.
TN	l s c u c u	Terminal Number. For Option 11.
...		
CLS	(CCBD), CCBA	(Deny) allow Collect Call Blocking.

LD 23 – Enable Collect Call Blocking on ACD queues.

Prompt	Response	Description
REQ	NEW CHG	Add new data. Change existing data.
TYPE	ACD	ACD data block.
CUST	xx	Customer number.
ACDN	xxxx	ACD Directory Number.
...		
CCBA	(NO), YES	(Deny) allow Collect Call Blocking.

LD 24 – Enable Collect Call Blocking on DISA blocks.

Prompt	Response	Description
REQ	NEW CHG	Add new data. Change existing data.
TYPE	DIS	DISA data block.
CUST	xx	Customer number.
...		
DN	xxxxxxx	DISA Director Number.
...		
CCBA	(NO), YES	(Deny) allow CCB answer signal to be sent.

LD 87 – Enable Collect Call Blocking on CDP Steering codes.

Prompt	Response	Description
REQ	NEW CHG	Add new data. Change existing data.
CUST	xx	Customer number.
FEAT	CDP	Coordinated Dialing Plan
TYPE	TSC, DSC	Steering code type.
...		
CCBA	(NO), YES	(Deny) allow CCB answer signal to be sent.

Feature operation

No specific operating instructions are required to use this feature.

Meridian Link Predictive Dialing Support

With Predictive Dialing, the process of making outgoing calls to customers is automated for Automatic Call Distribution (ACD) agents. Host applications can request the Meridian 1 to make calls using autodialers or phantom TNs. When a call is answered, the application sends a request to the switch to transfer the call to a live agent. The call needs to be transferred before, or while, the customer starts speaking in order to prevent customers from abandoning the call if they think no one has called them. This transfer was previously performed by Meridian Link in two steps by sending two separate Application Module Link (AML) messages to initiate and then complete the transfer. This operation takes a minimum of 400 to 500 milliseconds for the Meridian 1 to process.

The Fast Transfer development in X11 Release 21 allows applications residing on the application Module (AM) or host computers to transfer a call in one step, a blind transfer, by sending only on AML message (Fast Transfer) to the switch, thereby saving approximately 200 to 250 milliseconds of transfer time. This Fast Transfer feature is useful for predictive applications to make outbound calls and then quickly transfer them once the customer has answered (i.e., live voice has been detected). Fast Transfer can also be used in a non-predictive dialing environment. Applications that want to perform a blind transfer can now execute it more quickly.

The Predictive Dialing feature enables applications residing on the AM or host computers to send a combined Make Call and Transfer request on behalf of an autodialer or Phantom TN. As soon as live voice is detected by third-party equipment, or notification is sent to the switch indicating the call has been answered (e.g., answer supervision), the application can send the Fast Transfer request to the switch immediately transferring the call to an ACD agent.

Operating parameters

When Phantom TNs/DNs are used to originate calls as part of a predictive dialing operation, the Option 11 will not be supported.

Attendant Consoles, and Basic Rate Interface sets cannot initiate Fast Transfer or predictive calls.

The Meridian 1 does not support live voice answer detection. Live voice answer detection is currently achieved through third-party vendor equipment.

If phantom TNs/DNs are used, this development only supports calls and Fast Transfers originated by phantom TNs/DNs which are defined as Associate set (AST) Meridian 1 proprietary sets on a phantom loop.

Data calls are not supported.

For outbound trunk calls, if no third-party equipment is used to detect live voice answer, the switch will have to depend on receiving answer supervision before transferring the call to the target DN.

If voice detection is used, the application will not be able to Fast Transfer the call before the call is established (i.e., answer notification is received).

The application will not be able to complete the transfer when Fast Transferring over a trunk.

Not all analog trunks support answer supervision. All digital trunks do not provide answer supervision. For trunks that do not support answer supervision, the End-of-Dialing (EOD) timer will be used to trigger the transfer.

Receiving answer supervision depends on the accuracy of signals returned by the external network. Answer supervision may be received before an OED timeout, fake answer supervision may also be received due to an OED timeout, and a pseudo answer supervision may be received if the far-end has an EOD timeout even though the local switch has answer supervision configured.

The AML requires an Enhanced Serial Data Interface (EDSI) card or Multi-purpose Serial Data Link (MSDL) card (NT6D80AA) on the switch. If an Option 11 is used, a Serial Data Interface/D-Channel (SDI/DCH) card (NTAK02AA) is required to configure the EDSI port.

The AML connection requires an FS232 cable.

Meridian Link software is required for host application to utilize this feature.

Feature interactions

Call Transfer by Meridian 1 proprietary Set The application sends the Fast Transfer request on behalf of a Meridian 1 proprietary set, and then the switch initiates and completes the transfer immediately which is similar to a normal call transfer from a Meridian 1 proprietary set.

In a Predictive Dialing scenario where the autodialer (origination DN) is a Meridian 1 proprietary set, the Make Call message sent by the application to the switch to make a call on behalf of the Meridian 1 proprietary set, and then the call transfer call, will interact with the Meridian 1 proprietary Call Transfer feature. The autodialer is configured with Class of Service TRN so that the switch can transfer the call to the target destination.

Call Transfer by analog (500/2500 type) Set The application sends the Fast Transfer request on behalf of an analog (500/2500 type) set. The switch will then initiate and complete the transfer in one step.

- In a predictive dialing scenario, the application will send the Make Call request on behalf of the autodialer (analog (500/2500 type) set) to have the switch make the call, and then transfer the call when the switch receives the Fast Transfer message. The autodialer needs to be configured with Classes of Service Dial Pulse (DIP) and Transfer Allowed (XFA) for 500 sets, or with Classes of Service Digitone (DTN) and XFA for 2500 sets.

Command and Status Link The Command and Status Link also known as the AML, is the link on which the messages for the Predictive Dialing feature flow between the switch and an Application Module. The CON/Fast Transfer is an AML message.

Trunks Only certain trunks will support answer supervision. The End-of-Dialing timer will be used for trunks that do not support answer supervision.

Call Hold If an established call is put on hold by the set initiating the Fast Transfer, the switch will not be able to transfer the call. The switch can only transfer a call if it is in the established state.

Feature packaging

There are no new software packages required for the Predictive Dialing feature. However, the following packages are required to utilize the feature:

- Application Module Line (IAP3P) package 153, and
- Meridian Link Module (MLM) package 209 if the Meridian Link Module is involved.

Feature implementation

This feature does not require any changes to the overlays. The following illustrates the configuration requirements to set up this feature. Most of these requirements are used by existing Meridian Link and Application Module application.

LD 17 – Configure the ADSI port to the Meridian Link Module.

Prompt	Response	Description
REQ	CHG	Change existing data.
TYPE	CFN	Configuration record.
ADAN	NEW AML x	Add I/O device type AML to TTY port x. x is the port number.
- CTYP	EDSI	Card Type. EDSI card.
- DNUM	x	Device number is x.
- DES	NEWTTY	Description of this I/O device.
- BPS	19200	Baud rate is 19,200 bits per second.
- CLOK	INT	Internal clocking.
- IADR	3	HDLC protocol individual address.
- RADR	1	HDLC protocol remote address.
...		

- CSQI	(20)	Maximum call registers for Command and Status Link (CSL) input queues (use the default, unless the system requires otherwise).
- CSQO	(20)	Maximum call registers for CSL output queues (use the default, unless the system requires otherwise).
...		
VAS	NEW	New value added server ID.
- VSID	y	Server ID y.
- AML	x	Port used by AML defined earlier in this overlay.
- - SECU	YES	Security on for Meridian Link.
- - INTL	x	Length of time interval (five-second increments) (e.g., 2).
- - MCNT	x	Threshold for number of messages per time interval (e.g., 100).
- - CONF	DIR	Direct link configuration.

LD 17 – Configure the MSDL port to the Meridian Link Module.

Prompt	Response	Description
REQ	CHG	Change existing data.
TYPE	CFN	Configuration record.
ADAN	NEW AML x	Add I/O device type AML to TTY port x. x is the port number.
- CTYP	MSDL	Card Type. MSDL card.
- DNUM	y	Device number is y. Refers to the device number on the MSDL card.
- DES	MERIDIAN_LINK	Description of this I/O device.
- BPS	19200	Baud rate is 19,200 bits per second.

- PARM	RS232 DCE	Parameters for interface and transmission mode. DTE/DCE setting.
- IADR	3	HDLC protocol individual address.
- RADR	1	HDLC protocol remote address.
...		
- CSQI	(20)	Maximum call registers for Command and Status Link (CSL) input queues (use the default, unless the system requires otherwise).
- CSQO	(20)	Maximum call registers for CSL output queues (use the default, unless the system requires otherwise).
VAS	NEW	New value added server ID.
- VSID	y	Server ID y.
- AML	x	Port used by AML x, defined earlier in this overlay.
- - SECU	YES	Security on for Meridian Link.
- - INTL	x	Length of time interval (five-second increments) (e.g., 2).
- - MCNT	x	Threshold for number of messages per time interval (e.g., 100).
- - CONF	DIR	Direct link configuration.

LD 10 – Configure non-ACD analog (500/2500 type) telephones as autodialers.

Prompt	Response	Description
REQ	CHG	Change existing data.
TYPE	500	Telephone type.
...		
TN	I s c u c u	Terminal Number. For Option 11.
...		
CUST	xx	Customer number.
...		
DN	x...x	Internal Director Number
AST	YES	Associate set assignment. The internal DN is at AST.
CLS	XFA	Transfer allowed.
CLS	DIP	dial Pulse Class of Service for 500 sets (use DTN for 2500 sets).

LD 11 – Configure non-ACD Meridian 1 proprietary telephones as autodialers.

Prompt	Response	Description
REQ	NEW	Add new data.
TYPE	aaaa	Telephone type, where: aaaa = SL1, 2006, 2008, 2009, 2016, 2018, 2112, 2216, 2317, 2616, or 3000.
TN	l s c u c u	Terminal Number. For Option 11.
...		
CUST	xx	Customer number.
...		
KLS	1-7	Number of key lamp strings, typically one.
...		
AST	xx yy	Key number for Associate set DN assignment.
...		
KEY	xx SCR yyyy	Key number, Single Call Ringing, DN.
KEY	xx TRN	Key number, Call Transfer.
KEY	xxx AO6	Key number, six-party conference.
KEY	xxx SCR yyyy	Key number, Single Call Ringing, second DN.
CLS	xx RLS	Key number, Release.

LD 23 – Configure ACD groups.

Prompt	Response	Description
REQ	NEW	Add new data.
TYPE	ACD	Automatic Call Distribution data block.
CUST	xx	Customer number.
ACDN	xxxx	ACD Directory Number.
xxx		
ISAP	YES	Integrated Services Application Protocol. ACD DN uses Meridian Link (ISDN/AP) messaging.
- VSID	0-15	Value Added Server ID. This Server ID used for Meridian Link messaging must match the VSID defined in LD 17.

LD 10 – Configure ACD analog (2500/500 type) telephones as autodialers.

Prompt	Response	Description
REQ	NEW	Add new data.
TYPE	500	Telephone type.
...		
TN	l s c u c u	Terminal Number. For Option 11.
...		
CUST	xx	Customer number.
...		
DN	x...x	Internal Directory Number.
AST	YES	Associate set assignment. The internal DN is an AST>
CLS	AGTA	ACD agent allowed Class of Service.

CLS	DIP	Dial Pulse class of Service for 500 sets (use DTN for 2500 sets).
...		
AACD	TES	ACD telephone is an Associate set.
FTR	ACD xxxx yyyy	ACD DN and the ACD position ID.

LD 11 – Configure ACD Meridian 1 proprietary telephones as autodialers.

Prompt	Response	Description
REQ	NEW	Add new data.
TYPE	aaaa	Telephone type, where: aaaa = SL1, 2006, 2008, 2009, 2016, 2018, 2112, 2216, 2317, 2616, or 3000.
TN	l s c u c u	Terminal Number. For Option 11.
...		
CUST	xx	Customer number.
...		
KLS	1-7	Number of key lamp strips, typically one.

...		
AST	xx yy	Key numbers for Associate set DN assignment.
...		
KEY	0 ACD xxxx yyyy	Key 0, ACD, ACD DN, and agent's ID.
KEY	xx MSB	Key number, Make Set Busy.
KEY	xx NRD	Key number, Not Ready.
KEY	xx TRN	Key number, Call Transfer.
KEY	xx AO6	Key number, six-party conference.
KEY	xx SCR yyyy	Key number, Single Call Ringing, second DN
CLS	xx RLS	Key number, Release.

LD 23 – Configure a Control DN (CDN - default mode). If the application wants to transfer a call to a target CDN, a CDN must be configured. CDNs can be in default or controlled mode.

Prompt	Response	Description
REQ	NEW	Add new data.
TYPE	CDN	Control Directory Number data block.
CUST	xx	Customer number.
CDN	xxxx	DN of the Control DN (counts as an ACD DN).
...		
DFDN	xxx...x	Default destination ACD DN.
CEIL	0-(2047)	CDN ceiling value. CEIL limits the number of unanswered calls a CDN can have as its default ACD DN at a time. Enter a maximum value (the default).
...		
RPRT	YES	Report Control.
CNTL	NO	NO sends CDN calls to the Default ACD DN.

LD 23 – Configure a Control DN (CDN - controlled mode). When a CDN is in controlled mode, the application can have control of the call once it enters the CDN.

Prompt	Response	Description
REQ	NEW	Add new data.
TYPE	CDN	Control Director Number data block.
CUST	xx	Customer number.
CDN	xxxx	DN of the Control DN (counts as an ACD DN).
...		
DFDN	xxx...x	Default destination ACD DN.
CEIL	0-(2047)	CDN ceiling value. CEIL limits the number of unanswered calls a CDN can have as its default ACD DN at a time. Enter the maximum value (the default).
...		
RPRT	YES	Report Control.
CNTL	YES	Control DN is in control (the default).
VSID	0-15	Value Added Server ID. Server ID used for Meridian Link messaging (defined in LD 17).
HSID	0-15	Host Line ID used when Customer Controlled Routing and Meridian Link applications are both running.

LD 14 – Define answer supervision for trunks. If the application wants to transfer outgoing calls based on answer supervision, answer supervision must be configured. If answer supervision is not configured, the End-of-Dialing timer will be used as a trigger for the Meridian 1 to transfer the call.

Prompt	Response	Description
REQ	CHG	Change existing data.
TYPE	aaa	Trunk type where: aaa = CAA, CAM, COT, CSA, DID, FEX, FGDT, IDA, TIE or WAT.
TN	l s c u c u	Terminal Number. For Option 11.
...	c u	Terminal Number for the Option 11.
SUPN	YES	Answer and disconnect supervision are required.

LD 16 – If the application is using the End-of-Dialing timer to transfer outbound calls, the timer must be configured in the Route Data Block.

Prompt	Response	Description
REQ	CHG	Change existing data.
TYPE	RDB	Route Data Block.
...		
CNTL	YES	Change controls or timers.
- TIMR	EOD 1281-(13952)-32640	End-of-Dialing timer in milliseconds. The default is 13952 milliseconds.

LD 17 – In order to originate calls from phantom TNs/DNs, a phantom loop must first be configured. A Phantom DN can then be configured as part of a specific device group.

Prompt	Response	Description
REQ	CHG	Change existing data.
TYPE	CFN	Configuration data block.
...		
CEQU	YES	Change to Common Equipment parameters.
- TERM	0-159	Single density local terminal loops.
	(X) 0-159	Precede loop number with X to remove.
	(C) 0-159	Precede loop number with C to create a phantom loop.
- TERD	0-159	Double density local terminal loops.
	(X) 0-159	Precede loop number with X to remove.
	(C) 0-159	Precede loop number with C to create a phantom loop.
- TERQ	0-159	Quad density local terminal loops.
	(X) 0-159	Precede loop number with X to remove.
	(C) 0-159	Precede loop number with C to create a phantom loop.

LD 97 – If a superloop is used, the phantom loop is configured in this overlay.

Prompt	Response	Description
REQ	CHG	Change existing data.
TYPE	SUPL	Superloop parameters.
SUPL	0-156	Superloop number in multiples of four.
	(X) 0-156	Precede superloop number with X to remove.
	(C) 0-156	Precede superloop number with C to create a phantom superloop.

LD 11 – After configuring the phantom lock, an AST Meridian 1 proprietary set can be designated to a specific device group which can be controlled by applications. Therefore, when an application wants to originate a call on behalf of an idle TN, it can use a phantom TN. This idle TN is an AST Meridian 1 proprietary set which is defined on a phantom loop. The ITNA and DGRP prompts must be configured as follows.

Prompt	Response	Description
REQ	NEW	Add new data.
TYPE	aaaa	Telephone type, where: zzzz = 2006, 2008, 2009, 2016, 2018, 2112, 2216, 2317, 2616, or 3000.
TN	l s c u c u	Terminal Number. For Option 11.
...		
CDEN		Card density.
	SD	Single density.
	DD	Double density.
	4D	Quad density.
DES	phanDN	One-to-six character Office Data Administration system (ODAS) Station Designator.
CUST	0-99	Customer number.
...		

CLS	NDD	No digit display is recommended if configuring phantom devices.
CLS	(DNDD)	Dialed Name Display denied is recommended if configuring phantom devices.
...		
AST	00	Key 0 is AST>
IAPG	(0)-15	Meridian Link Unsolicited Status Message (USM) group. These groups determine which status messages are sent for an AST set. The default 0 sends no messages, whereas Group 1 sends all messages.
ITNA	(NO), YES	Idle TN for third-party application.
DGRP	(1)-5	Device Group with which phantom TNs are associated.
...		
KEY	xx SCR yyyy	Key number, Single Call Ringing, DN.
CLS	xx RLS	Key number, Release.

Feature operation

Applications invoke the Fast Transfer feature by sending the application a Fast Transfer request message to the switch. No specific operating instructions are required to use this feature.

Meridian 911

The number 911 has been adopted for the purpose of reporting emergencies and requesting emergency services. For localities with 911 systems, the number:

- is the same in all communities
- is easily remembered, even under adverse conditions, and
- provides direct telephone access to emergency services regardless of the time of day, or the caller's familiarity with an area, or the caller's ability to identify the type of emergency.

A 911 system is planned, implemented, and operated under the auspices of local governments. In most communities, 911 provides access to police, fire, and emergency medical services. In some locations additional services are accessible (e.g., dialing 911 in certain locations provides access to Coast Guard search and rescue services). Approximately 80 percent of all 911 calls are intended for the police, with the balance split between fire and ambulance.

Because the overwhelming majority of 911 calls require police attention, local police departments generally maintain, manage, and staff the center to which emergency calls are first directed. These centers are referred to as primary answering centers. A secondary answering center could be a police, fire, or ambulance station (e.g., fire-related 911 calls may be transferred to a secondary answering center that handles incoming calls regarding fires). In many instances, the fire department also determines the degree of urgency for emergency medical services.

If the primary or secondary answering center is busy or out of service, the 911 call is directed to a backup answering center, referred to as an alternate answering center.

The public network routes a 911 call to the appropriate primary answering center based on the caller's telephone number. For this reason, callers dialing 911 give up their right to privacy regarding:

- the telephone number of the station from which they are calling, and
- the billing address associated with that telephone number.

To protect a caller's right to privacy, some communities still allow the use of seven-digit emergency numbers, routed either to an answering center or directly to the responding agency.

Basic 911 service

Basic 911 service routes emergency calls to an answering center based on the location of the Public Exchange/Central Office serving the calling station. The jurisdiction of an answering center is determined by the Central Office boundaries. The most basic 911 system involves only one Central Office and one exchange service area, and may be a single answering center. Force Disconnect, and Idle Tone Application are examples of basic 911 features.

Enhanced 911 service

In areas where telephone company Central Office boundaries do not match jurisdictional boundaries, there is a problem in identifying which emergency agency should receive the emergency call. There may be an even more complicated situation if the 911 network includes two or more primary answering centers, and each serves areas that do not match the Central Office serving areas.

Enhanced 911 (E911) service ensures that an emergency call originating in any particular jurisdiction covered by the 911 system is recognized and forwarded to the appropriate responding agency in the same political jurisdiction as the originating call.

Enhanced 911 service uses more sophisticated equipment and features than basic 911 service. Specialized features include:

- Automatic Number Identification (ANI)
- Automatic Location Identifier (ALI), and
- Selective Routing (SR).

Display of the ANI associated with the originating call sometimes replaces the need for the following basic 911 options: Called Party Hold; Emergency Ringback; and Switchhook Status. Therefore, sometimes these features are not provided with enhanced 911 service.

The Automatic Number Identification (ANI) of a 911 call consists of eight digits (a Numbering Plan or Information digit followed by the seven digits of the calling party number). Whether the first digit of the ANI string should be interpreted as a Numbering Plan Digit (NPD) or an Information Digit (ID) depends on the trunk interface and Meridian 1 configuration.

The Automatic Location Identifier (ALI) host computer uses the ANI to locate the ALI record for the calling party number. This includes the name and address, and whether the line is business or residence. An enhanced 911 system creates ALI information from the ALI record and automatically route the ALI information to an optional data terminal display at the answering center.

An enhanced 911 system routes all emergency calls from the originating Central Offices through an E911 Tandem, sometimes call a 911 control office, to the primary answering center. There, using Selective Routing features, a call taken can transfer the call through the public network by signaling the E911 Tandem. The Autodial Tandem transfer feature can be used for this. For example, if the primary answering center transfers calls to several fire departments, it uses one fire department button. The option automatically:

- identifies the fire department associated with caller's location, and
- transfers the call to that department.

Meridian 911 system

The Meridian 911 system:

- gives priority to emergency calls
- routes priority calls, without interrupting service, to answering positions that can identify and dispatch the assistance required with minimum delay
- displays the calling party's number, and
- provides an external notification that an emergency call is queued.

When a call arrives at the Meridian 1 via an M911 trunk, the trunk software in the Meridian 1 communicates with the serving Central Office (CO) (either the local Central Office or the M911 tandem office) to receive the ANI information via multifrequency (MF) signaling. When all ANI digits are received, the Meridian 1 software starts to process the call.

Meridian 911 Call Abandon (Release 21)

A 911 call is considered abandoned by the Meridian 1 if the call terminates on a 911 trunk route, and the calling party disconnects are trunk seizure, but before the call is answered. This can occur while the call is waiting in an Automatic Call Distribution (ACD) or Controlled DN (CDN) queue, or when the call is presented to the ACD agent but is not yet answered.

The Call Abandon feature allows the Meridian 1 to treat an abandoned call as though the calling party is still connected. The call maintains its place in the ACD queue, and is presented to an agent. When the agent answers, the agent receives a continuous, cadenced six-second tone, as well as an indication on the set's display, to indicate that the call is an abandoned call. Automatic Number Identification (ANI) information is also displayed. The agent can then call back the originator of the call.

Once the call is abandoned, the trunk is released for other 911 calls. Information on abandoned calls can be included in Call Detail Recording (CDR) records if New Format CDR (FCDR) package 234 is equipped.

Operating parameters

Meridian 911 Meridian 911 routes are restricted to incoming traffic only.

Incoming M911 Trunks use MF signaling only. Dial Pulse (DP) and Dual-Tone Multifrequency (DTMF) are not supported for M911 routes.

911 Calls on Integrated Services Digital Network (ISDN) trunks are not supported.

A call is considered a 911 call by X11 software if it arrived on a trunk belonging to an M911 route. Calls dialing 911 internally can, through configuration of the Electronic Switched Network (ESN) digit manipulation tables, be terminated locally (e.g., to a Controlled DN), but these calls are internal calls to the software, not 911 calls.

ANI is expected for every call. Meridian 911 does not support 911 calls from an E911 Tandem which does not support sending ANI.

The priority of incoming trunk calls internally transferred to an Automatic Call Distribution (ACD) DN queue (a secondary answering center) may be preserved via blind transfer only. All other types of call modification (e.g., consultation transfer, or conference) are treated as internal calls and the calls are linked to the low priority queue of the ACD DN.

The No Hold Conference feature, the recommended feature for transferring calls between answering positions, is not available on analog (500/2500 type) sets.

The Call Prioritization (911 calls being presented with higher priority, i.e., superseding business or non-911 calls) and Call Waiting Notification features are applicable to ACD answering center only. These cannot be supported on Multiple Appearance Directory Number (MADN) answering centers.

The first answering center must be an ACD DN.

M911 trunk calls must terminate on a CDN. If an autoterminate DN is specified that is not a CDN, and SCH error message is printed. If a CDN is used as the autoterminate destination of at least one M911 trunk, the CDN cannot be removed via LD 23 (an SCH message will be given). To remove the CDN, all M911 trunks terminating to it must be removed, or they must be changed to terminate to a different CDN.

CDNs as well as ACD DNs are normal dialable numbers. Nothing prevents non-911 calls from arriving at either the CDN, or any of the ACD DNs acting as answering centers via direct dialing. NON-911 calls arriving at CDNs are defaulted to the CDNs default ACD DN; non-911 calls arriving at an ACD DN are treated as normal calls.

The Call Waiting Notification (CWNT) package 225 is a separate package and an M911 system can be installed without it. If the package is not equipped, no external alert can be given for 911 calls arriving at an ACD queue.

The SWNT software is available for 911 calls in ACD queues only. There is no provision for alerting MADN call takers of arriving 911 calls.

911 calls in an ACD queue are not treated any different from other ACD calls. Therefore, if Recorded Announcement (RAN) is configured for the ACD queue, 911 calls will be given RAN treatment. The same interactions between RAN and Central Office loopstart trunks exist for M911 as they do for general ACD operation.

Meridian 911 Call Abandon (Release 21)

Calls released by the originator after the call has been answered are not calls abandoned by the definition used for the M911 Call Abandon feature and do not receive abandon treatment.

Abandoned calls waiting in the ACD queue activate the Call Waiting Notification Terminal Number.

If ANI is not received, the abandoned call is not presented to the agent since it is no longer useful; however, a Call Detail Recording (CDR) N record, if configured, can be printed to indicate that the call has abandoned.

Only external 911 calls abandoned before answer are supported.

When the call is abandoned, the speech path is dropped, and the trunk is released.

If Flexible Tone and Cadences (FTC) package 125 is equipped, it is possible to configure a tone other than the one provided by default.

Call Abandon is configured on a per route basis.

Call Abandon is supported on 911 trunks only.

No B record is generated by CDR for an M911 abandoned call, because the B record is package dependent and only applies to an established call with Internal CDR.

Wireless sets are not supported at the Public Safety Answering Point (PSAP) or Secondary Safety Answering Point (SSAP) for Call Abandon.

An MF tone receiver (QPC916 or NTAG20AA) is required.

Feature interactions (Meridian 911)

Automatic Call Distribution Interactions ACD-C Reports—The Meridian 911 product does not change the ACD-C reports. M911 will use the ACD-C reports for CDNs as introduced for Customer Controlled Routing CCR in Release 17.

Only three of the fields in the report will have any meaning. Because M911 uses the Route-to AML message instead of the Queue-to message, only “Route To”, “Default DN”, “Abandoned”, and “Calls Accepted” are meaningful. Those calls that are successfully routed count towards the “Route To” category. Those calls that get default treatment count towards the “Default DN” category. Those calls that abandon while they are in the CDN queue count towards the “Abandoned” category. The “Calls Accepted” category will be the sum of the “Route To”, “Default DN”, and “Abandoned” categories.

The “# of CALLS in the Queue” category represents those calls that are sitting in the CDN queue. This should always be zero, since calls waiting for a Route-to request from the Application Module are sitting in a timing queue as opposed to the CDN queue.

M911 calls routed to an ACD answering center will show up in the normal ACD Queue and agent reports for that queue. Calls routed to MADN answering centers will show up only in the CDN report.

ACD-D Auxiliary Message No changes to the ACD-D reports are needed for Meridian 911.

Controlled Director Number (CDN) Ceiling The CDN ceiling feature returns busy tone to calls arriving at the CDN while it is in default mode. If a 911 call should arrive while these conditions are true, the 911 call will not hear busy tone, but will be linked into the default destination ACD DN’s queue. Therefore, the setting of the ceiling value is irrelevant if only 911 calls are expected at the CDN. The ceiling value will, however, still be applied to non-911 calls arriving at the CDN.

Controlled Director Number (CDN) Ringback

911 Calls get ringback immediately upon arrival at a CDN, whereas CCR calls do not.

Custom Call Routing (CCR) Call Abandoned Message (ICAB) This message is sent for controlled calls that were abandoned before being answered.

Custom Call Routing (CCR) Call Enters Queue Message (ICEQ) This message is sent to ACD-MAX each time a default call is placed in the default ACD DN (default mode).

Custom Call Routing (CCR) Call Modification Message (ICCM) This message is sent to ACD-MAX when a call modification request (route to, disconnect, busy) is successfully executed upon a CDN controlled call.

Note that since the Rout To, Disconnect and Busy treatments remove CDN control from the call, ICCM messages will be sent for the call for each of the queues from where it must be removed. The ICCM message also applies to Enhanced ACD Routing calls or CDN default calls which were busied by the call ceiling value while trying to route to the default ACD-DN.

Custom Call Routing (CCR) "Route To" Command The Route to destination for 911 calls are restricted to ACD DN's only. If the routing destination is not an ACD DN, the call will be routed to the CDN's default destination ACD DN. CCR calls can be routed to any dialable number.

Enhanced ACD Routing/Customer Controlled Routing The Enhanced ACD Routing/Customer Controlled Routing (EAR/CCR) features introduce CDNs. The Enhanced ACD routing (EAR) package 214 allows CDNs to be configured and is a prerequisite of the Meridian 911 (M911) package 224.

Interflow 911 Calls interflow just like any other ACD calls. If the interflow feature is configured so that if a call gets busy tone from an internal destination, the 911 call will not get busy tone, but will instead be linked back into the source ACD queue.

If the interflow destination is a number outside the Meridian 1, the software has no control over the treatment the call gets, so this configuration is not recommended operation for 911 sites.

Load Management Commands No changes are made to Load Management for Meridian 911.

Night Service

Night Call Forward It is recommended that the primary ACD DN not be put in Night Service. If the primary ACD DN is put in Night Service, calls will be sent to the Night Call Forward (NCFW) destination. Even if a 911 call arrived on a trunk with CPDC defined, the call will still be allowed to NCFW, unlike non-911 ACD calls. This restriction is lifted for 911 calls only. The CWNT set will not ring for calls entering the queue while in Night Service when the queue has a NCFW destination specified.

Overflow 911 Calls will overflow (by count and by time) just like any other ACD calls.

Supervisor Control of Queue Size This feature causes calls to get busy tone once the overflow threshold (OVTH) of the ACD queue is exceeded. This feature is bypassed for 911 calls.

Call Detail Recording (CDR) Records ANI available for 911 calls is included as the Calling Line Identification (CLID) in CDR Records pertaining to 911-trunk calls. CDR Records affected are: Normal Records, Start/End Records, Authorization Code Records, Connection Records (Q, R, and F records), and Charge Account Records.

Called Party Disconnect Control The Called Party Disconnect (CPDC) feature is used to retain a 911 trunk when a 911 call is disconnected by the caller. No modification to the feature is required for Meridian 911, except lifting the CPDC and ACD NCFW limitation. 911 Calls, arriving via trunks with CPDC defined, will be allowed to NCFW, unlike non-911 ACD calls.

Calling Party Name Display The Calling Party Name Display feature can be used to configure and display the incoming 911 route name.

Conference When a call is answered, and then conferenced, the trunk priority is lost (the conference consultation call is an internal call and treated as low priority by the software). This operation is the same for normal calls and 911 calls.

Dialed Number Identification Service (DNIS) DNIS is not supported on 911 trunks.

Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI) Answering Positions are not supported on BRI sets.

Integrated Services Digital Network (ISDN) Primary Rate Interface 911

Trunks are not supported On ISDN PRI Trunks or Integrated Service Link (ISL) trunks.

Japan Direct Inward Dialing (DID) Trunks Japan DID trunks are not supported.

Malicious Call Trace The Malicious Call Trace (MCT) feature is modified to be supported on ACD sets. ACD sets are allowed to have the MCTA Class of Service and a TRC key defined. The feature is activated via pressing the MCT key or dialing a MCT access code.

No Hold Conference No Hold Conference calls are treated as internal calls and are linked to the low priority queue of the ACD DN.

Single and Multiple Call Ringing for MADNs The DN keys for multiple appearance sets can be defined as an SCR (single call ringing) key or as an MCR (multiple call ringing) key. For those DN (keys on MADN sets) that are SCR, only one call may be answered at a time. That is to say that once a call taker has answered a call, future calls to that DN will receive busy tone until the call taken on that DN has disconnected.

For DN (keys) that are MCR, calls will only be given busy tone once every call taker is busy answering a call. If one call taker is answering a call and there are other call takers available, a new call to that DN will cause the sets of the available call takers to ring. Any available call taker can then answer the new call.

Transfer Trunk priority associated with an incoming 911 call is only preserved if blind transfer is used.

Meridian 911 Call Abandon (Release 21)

Attendant Break-In Since an abandoned call does not have a speech path established, the Break-In deny treatment is given to the attendant so that Break-In cannot occur.

Automatic Call Distribution (ACD) When a call is abandoned, the call remains in its current state (i.e., ACD queue, CDN queue, or ringing on an ACD agent set).

Automatic Call Distribution Reports ACD-C and ACD-D packages are not modified for M911 Call Abandon. However, a new interpretation for the report fields are needed for abandoned calls. The incoming call is pegged as an abandoned call when the caller abandons. However, it is not repeatedly pegged as an answered call when the call taker answers the abandoned call.

For ACD-C package, the CALLS ANSWD field only accounts for real calls; the ABANDONED field accounts for abandoned calls that are answered, assuming all abandoned calls are eventually answered by an agent. Consequently, the CALLS ACCPTD field is equal to the CALLS ANSWD field plus the ABANDONED field (number of calls entering queue = number of real calls + number of abandoned ones). This way the Average or Total Call Processing (DCP) Time accurately reflects the amount of time an agent spent on real calls, since answering an abandoned call requires little time. The work an agent does for an abandoned call is more accurately reflected in the DN OUT and OUT TIME fields, which mean total number of outgoing calls and total time of all outgoing calls respectively. Since the agent must hang up the abandoned call and call back to see what the condition is, the outgoing call that is made is more valuable for reporting the agent's work.

For the ACD-D package, the reports also need to be interpreted in this way. When the caller abandons, CAB message is sent to Meridian MAX; however, later when an abandoned call is answered by an agent no CAA message is sent to Meridian MAX.

Call Force M911 abandoned calls cannot be call forced.

Called Party Disconnect Control There is no interaction with M911 Call Abandon and Called Party Disconnect Control.

Conference M911 abandoned calls cannot be conferenced.

Display Calls Waiting Key

ACD Calls Waiting Key

Ongoing Status Display

Real-time Display In all of these situations, abandoned calls contribute to the queue count.

Hold M911 abandoned calls cannot be put on hold.

Initialization Unanswered abandoned calls are lost if the system initializes.

Interflow Abandoned calls contribute to the queue count. An abandoned call can interflow only the ACD DN.

Network ACD Network ACD is not supported.

Night Call Forward (NCFW) Abandoned calls can be forwarded to the Night Call Forward DN if the Night Forward DN is an ACD DN. If a primary answering center goes into Night Service while there are abandoned calls in the queue, those abandoned calls are dropped. A CDR N record is printed if CDR is configured.

Night Service Key Abandoned calls are part of the transition mode when agents go to Night Service and the supervisor selects transition mode.

No Hold Conference M911 abandoned calls cannot be No Hold conferenced.

Not Ready Key When an abandoned call is presented to an agent and the agent presses the Not Ready Key, the call is put back into the queue. If an agent is established on an abandoned call and presses the Not Ready Key, the call is dropped.

Overflow by Count Abandoned calls contribute to the queue count. An abandoned call can overflow.

Supervisor Observe Since there is no speech path between the ACD agent and the caller, the supervisor observe feature will be blocked. The supervisor can still press the observe key to observe an agent active on an abandoned call, but will hear silence.

Transfer M911 abandoned calls cannot be transferred.

Feature packaging

The following packages are required:

- Digits Automatic Call Distribution (DDSP) package 19
- Basic Automatic Call Distribution (BACD) package 40
- Automatic Call Distribution Package B (ACDB) package 41
- Automatic Call Distribution Package A (ACDA) package 45
- Enhanced Automatic Call Distribution Routing (EAR) package 214

- Meridian 911 (M911) package 224, and
- Call Waiting Notification (CWNT) package 225.

The following additional packages are not required, but are recommended:

- At least one of either Call Detail Recording (CDR) package 4, or Call Detail Recording on Teletype Machine (CTY) package 5
- Automatic Call Distribution Package C (ACDC) package 42 (not needed if packages 51 and 52 are enabled)
- Automatic Call Distribution Load Management Reports (LMAN) package 43
- Automatic Call distribution Package D (ACDD) package 50
- Automatic Call Distribution Package D, Auxiliary Link Processor (LNK) package 51
- Call Party Name Display (CPND) package 95
- Malicious Call Trace (MCT) package 107, and
- Calling Line Identification in Call Detail Recording (CCDR) package 118.

The M911 Call Abandon feature is included in Meridian 911 (M911) package 224, and required Call Identification (CALL ID) package 247.

If an application also involves Meridian Link, Meridian Link Module (MLM) package 209 is required.

Feature implementation

This section provides an example of how to configure Meridian 911. The order in which all items must be configured, in order for M911 to run on the Meridian 1, is outlined. In addition, the implementation procedures for M911 Call Abandon are shown.

LD 10 – Configure a Terminal Number for an analog (500/2500 type) set with a Class of Service of CWNA (Call Waiting Notification Allowed).

Prompt	Response	Description
REQ	NEW	Add new data.
TYPE	500	Type of telephone set.
TN	l s c u c u	Terminal Number. For Option 11.
DES	xxx	Office Data Administration System (ODAS) package designator.
CUST	xx	Customer number.
...		
DN	nn...n	Internal Director Number.
...		
CLS	CWNA	Call Waiting Notification Allowed Class of Service (DTN or DIP).

LD 23 – Configure ACD DN's. The SWNC (CWNT control) is recommended to be set as YES for the primary answering centers (rings for priority calls only) and NO for secondary answering centers (rings for all calls).

Prompt	Response	Description
REQ	NEW	Add new data.
TYPE	ACD	ACD Data Block.
CUST	xx	Customer number.
ACDN	nn...n	ACD Directory Number.
...		
MAXP	nn	Maximum number of agent positions.
...		
ISPA	YES	ACD DN uses Meridian Link messaging.
VSID	n	Servicer ID used for Meridian Link messaging (defined in LD 17).
...		
OVTH	2047	Recommended overflow threshold.
...		
CWNT	I s c u	Call Waiting Notification TN.
CWNC	YES	Call Waiting Notification control.

LD 23 – Configure CDNs. The coiling value is irrelevant for 911 calls terminating at the CDN, but will be applied to non-911 type calls. When the ceiling value is exceeded, new non-911 calls will receive busy tone.

Prompt	Response	Description
REQ	NEW	Add new data.
TYPE	CDN	Controlled Directory Number Data Block
CUST	xx	Customer number.
CDN	nn...n	Controlled DN number.
...		
DFDN	nn...n	Default ACD DN.
CEIL	2047	Recommended Ceiling Value
RPRT		Report control
CNTL	YES	Controlled mode (controlled = YES).
VSID	n	Server ID used for Meridian Link messaging (defined in LD 17)

LD 16 – Configure an M911 route.

Prompt	Response	Description
REQ	NEW CHG	Add new data. Change existing data.
TYPE	RDB	Route data block.
CUST	xx	Customer number.
ROUTE	nnn	Route number.
TKTP	DID	Meridian 911 routes use Direct Inward Dialing trunks.
M911_ANI	YES	Enter YES for 911 route.
K_TYPE	(911T), 911E	911T = E911 tandem connection 911E = End office connection.
NPID_TBL_NUM	0-7	NPID Table Index (NPID Table must be created earlier in LD 16 before using it here).

LD 16 –The following prompting sequence creates a Numbering Plan or Information Digit (NPID) Table.

Prompt	Response	Description
REQ	NEW CHG	Add new data. Change existing data.
TYPE	NPID	Numbering Plan or Information Digit data block.
IDTB	0-7	ID table index. ID table index to be used by this M911 route.
NPID	0-9	NPID for M911 routes.
TRMT	(NONE, NPA, FAIL, TEST	Numbering Plan Digit or Information Digit treatment.
- NPA	nnn	Numbering Plan Area. Prompted on if TRMT = NPA.

LD 14 – Configure 911 trunks.

Prompt	Response	Description
REQ	NEW	Add new data.
TYPE	DID	Meridian 911 trunks must be DID.
TN	I s c u c u	Terminal number. For Option 11.
...		
XTRK	XUT, XEM	Universal, or Enhanced EM trunk card.
CUST	xx	Customer number.
NCOS	xx	Network Class of Service Group Number.
RTMB	xx xx	Route number and Member number.
MNDN	xxxx	Manual Directory Number.
ATDN	xxxxxxx	Autoterminate DN.
TGAR	xx	Trunk Group Access Restriction.
SIGL	EAM, EM4, LDR	Trunk signaling.
...		
STRI	WNK	Incoming start arrangement.
SUPN	YES	Answer and disconnect required.
CLS	MFR APY	Meridian 911 trunks must have MFR and APY Classes of Service (this is done automatically).

LD 16 – Configure Call Detail Recording (CDR).

Prompt	Response	Description
REQ	CHG	Change existing data.
TYPE	RDB	Route data block.
CUST	xx	Customer number.
ROUTE	xxx	Route number.
TKTP	DID	Meridian 911 routes use DID trunks.
...		
CDR	YES	CDR trunk route.
INC	YES	CDR records generated on incoming calls.
QREC	NO	CDR ACD Q initial records to be generated.

LD 17 – Configure the insertion of ANI digits into the CDR record.

Prompt	Response	Description
REQ	CHG	Change existing data.
TYPE	CFN	Configuration record.
...		
CLID	YES	Calling Line ID (ANI for M911) in CDR.

LD 10 – Configure non-ACD sets (that is, analog (500/2500 type) sets).

Prompt	Response	Description
REQ	NEW	Add new data.
TYPE	500	Type of telephone set.
TN	l s c u c u	Terminal Number. For Option 11.
CDEN	(DD), SD, 4D	(Double), single and quadruple card density.
CUST	xx	Customer number.
DIG	xx yy	Dial Intercom Group number and Member number.
DN	NN...N	Directory Number.
...		
IAPG	2	ISDN/AP status message group.
...		
CLS	USMA	M911 position.

LD 11 – Configure non-ACD sets (that is, Meridian 1 proprietary sets).

Prompt	Response	Description
REQ	NEW	Add new data.
TYPE	aaaa	Telephone type, where: aaaa = SL1, 2006, 2008, 2009, 2018, 2112, 2216, 2317. 2616, and 3000.
TN	l s c u c u	Terminal Number. For Option 11.
CDEN	(DD), SD, 4D	(Double), single and quadruple card density.
DES	x...x	ODAS set designator.
CUST	xx	Customer number.
KLS	1-7	Number of Key/Lamp strips.
...		
CLS	USMA MCTA	M911 position; Malicious Call Trace allowed.
...		
IAPG	2	ISDN/AP status message group.
...		
KEY	xx SCR yyyy	This defines a Single Call Ringing DN key. The xx is the key number and the yyyy is the DN.

LD 11 – Configure Meridian 1 proprietary sets to function as ACD sets.

Prompt	Response	Description
REQ	NEW	Add new data.
TYPE	aaaa	Telephone type, where: aaaa = SL1, 2006, 2008, 2009, 2018, 2112, 2216, 2317, 2616, and 3000.
TN	l s c u c u	Terminal Number. For Option 11.
CDEN	(DD), SD, 4D	(Double), single and quadruple card density.
DES	x...x	ODAS set designator.
CUST	xx	Customer number.
KLS	1-7	Number of Key/Lamp strips.
...		
CLS	ADD AGN USMA MCTA	AGN is for agent; SUPN is for supervisor. USMA = 911 position, and MCTA = Malicious Call Trace allowed.
...		
IAPG	2	ISDN/AP status message group.
...		
KEY	0 ACD yyy xx	The ACD DN key where yyyy is the ACD DN.
KEY	xx TRC	Malicious Call Trance key. The xx is the key number.

LD 16 – Enable M911 Call Abandon.

Prompt	Response	Description
REQ	NEW CHG	Add new data. Change existing data.
TYPE	RDB	Route Data Block.
CUST	xx	Customer number.
ROUT	0-511	Route number.
TKTP	DID	M911 trunks are DID trunk type.
...		
M911_ANI	(NO), YES	Set to YES to receive ANI for M911 routes.
M911_TRK_ TYPE	(911T), 911E	Meridian 911 ANI trunk types, where: T911T = E911 tandem connections, and 911E = End office connection.
M911_ABAN	(NO), YES	Optional call abandon treatment, where: YES = abandoned call treatment for this route, and NO = no abandoned call treatment for this route.
M911_TONE	(YES), NO	Optional call abandon tone, where: YES = tone given on answer, and NO = silence given on answer.

LD 56 – Configure the new flexible tone for M911 abandoned calls, if desired.

Prompt	Response	Description
REQ	NEW CHG PRT	Add new data. Change existing data. Print data.
TYPE	FTC	Flexible Tone and Cadence data block.
TABL	0-31	FTC table number.
DFLT	0-31	Default table number.
RING	<CR>	
...		
CAB	YES	M911 Call Abandon upon Answer Tone.
TDSH	i bb cc tt	TDS external, burst, cadence, and tone.
XTON	0-255	NT8D17 TDS Tone code.
XCAD	0-255	NT8D17 cadence code for FCAD.

Feature operation

Meridian 911 operation To answer a call at a primary, secondary, or alternate answering center that is configured with ACD positions, the 911 call taker presses the ACD DN key. The DN of the incoming call is displayed on the call taker's set.

Meridian 911 Call abandon operation When the call is abandoned it remains in its current state (i.e., in CDN or ACD queue or ringing a call taker). Once the call taker answers, a continuous cadenced tone is heard for six seconds, followed by silence. This tone is programmable with the FTC package; otherwise, a default is given. The call taker must hang up and dial the ANI that is shown on the terminal display if call back is required.

Upon answer, the telephone set display is updated with the 911 call taker's ANI and the trunk group name if the Call Party Name Display feature is used. Since the call has been abandoned, the telephone set display flags the abandoned call by appending "ABAND" to the ANI.

The following example shows what is displayed on a telephone set with a Numbering Plan Digit (NPD) call with an NPD of 2 and with the CALL Party Name Display feature enabled. The trunk group name is displayed on the first line of the set display; the ANI appears on the second line.

```
911 CALL
2 493-6002 ABAND
```

PD of 1 that was translated to 415 and has the Call Party Name Display feature enabled. The trunk group name (e.g., Palo Alto) is displayed on the first line of the set display. The ANI appears on the second line.

```
Palo Alto
415 493-6002 ABAND
```

ISDN overview

Integrated Service Digital Networks (ISDN) use a standard protocol to transport both call-related and non-call-related messages to other nodes.

Network ACD uses ISDN D-channel messages to transport call information between the Source node and the remote Target queues. ISDN services allow the messaging between nodes required for Call Requests, cancellation, and set-up messaging described later in this document. Source and Target nodes can be connected through tandem switches; they do not need to be connected point-to-point.

Primary Rate Interface (PRI)

The ISDN PRI architecture is composed of protocol layers providing different services. There are three supporting layers:

Layer 1	Physical layer
Layer 2	Link layer
Layer 3	Network layer

These layers provide a standard interface for voice and data communication. Each layer uses the services provided by the layer below, and builds on these services to perform functions for the layer above. This layered approach splits complex protocols into easily managed blocks. Each layer or block can be modified without affecting the protocols in another layer.

D-channel

Within an ISDN environment, call control is supported out-of-band over the D-channel. The D-channel transports call control information.

Each D-channel can support up to 383 B-channels for voice transmission. Each system can support up to eight D-channels. For installation and engineering details, be sure to review “ISDN” on page 60.

ISDN Signaling Link (ISL)

ISDN Signaling Link (ISL) provides the capability to replace both digital and analog conventional trunk signaling with out-of-band ISDN D-channel signaling. ISL supports tie and ISA trunk types with Meridian 1 to Meridian 1 connectivity.

There are two modes of ISL operation:

- **Shared mode** This configuration is basically the same as the PRI D-channel also supporting ISL trunks.
- **Dedicated mode** The D-channel interface is reserved for ISL use.

An ISA route must be established and identified with the dedicated or shared ISL interface. For a complete description of the ISL operating parameters, refer to the *ISDN Primary Rate Interface description and administration* (553-2901-100).

Supporting documents

Network ACD (NACD) uses more than one special feature from the X11 software packages. You should have all of the ISDN and ACD publications relative to your application environment.

ACD

Automatic Call Distribution (ACD) allows a large number of incoming calls to the same directory number (called the ACD DN) to be answered at agent positions that share the influx of calls equally. The Automatic Call Distribution system is fully described in these documents:

- *Automatic Call Distribution feature description* (553-2671-110)
- *Automatic Call Distribution ACD management commands and reports* (553-2671-112)

ISDN

Network ACD is dependent on the network services and transport provided by ISDN. The ISDN network should already be up and running before loading the NACD package. Therefore, you should already have the following publications on hand:

- *ISDN Primary Rate Interface Feature description and administration*
- *ISDN Primary Rate Interface Installation*
- *ISDN Primary Rate Interface Maintenance*

System support documents

NACD requires that the system have a specific configuration. The documents listed here provide background information supporting that configuration.

Dialing Plans

- *Automatic Number Identification feature module in X11 features and services*
- *Basic and Network Alternate Route Selection description (553-2751-100)*
- *Coordinated Dialing Plan description (553-2751-102)*

Electronic Switched Networks (ESN)

- *Electronic Switched Network description (309-3001-100)*
- *Electronic Switched Network signaling guidelines (309-3001-180)*
- *Electronic Switched Network transmission guidelines (309-3001-181)*